

**WHAT IS CLAIMED IS:**

1. A chemical composition for obtaining curable elastomeric material from a sulfur-cured, vulcanized elastomeric material, sulfur, wherein said sulfur comprises from about 40% to about 65% by weight of said chemical composition;

a mixture of accelerators, including a first accelerator and a second accelerator, wherein a weight percent ratio of said first accelerator to said second accelerator ranges from about 1:1 to about 5:1; and

an activating agent comprising from about 2% to about 6% by weight of said chemical composition.

2. The chemical composition as recited in Claim 1 wherein said mixture of accelerators includes a third accelerator wherein a weight percent ratio of said first accelerator to said second accelerator to said third accelerator ranges from about 3:3:1 to about 4:1:1.

3. The chemical composition as recited in Claim 2 wherein said weight percent ratio of said first accelerator to said second accelerator to said third accelerator ranges from about 2.7:2.7:0.6 to about 4.4:1.0:0.6.

4. The chemical composition as recited in Claim 2 wherein  
2 said first accelerator is N-tert-butyl-2-benzoithiazole  
3 sulphenamide, said second accelerator is zinc 2-mercapto  
4 benzothiazole and said third accelerator is tetramethylthiuramic  
5 monosulphide.

5. The chemical composition as recited in Claim 1 wherein  
2 said activating agent includes a zinc salt of a fatty acid, wherein  
3 said zinc salt of a fatty acid comprises from about 3% to about 6%  
4 by weight of said chemical composition.

6. The chemical composition as recited in Claim 1 wherein  
2 said activating agent includes a mixture of zinc oxide and stearic  
3 acid.

7. The chemical composition as recited in Claim 6 wherein  
2 said zinc oxide comprises from about 1% to about 3% by weight of  
3 said chemical composition and said stearic acid comprises from  
4 about 1% to about 3% by weight of said chemical composition.

8. The chemical composition as recited in Claim 1 wherein  
2 said first accelerator is N-tert-butyl-2-benzoithiazole  
3 sulphenamide and said second accelerator is selected from the group  
4 consisting of zinc 2-mercapto benzothiazole and

5 tetramethylthiuramic monosulphide and said mixture comprises about  
6 34% by weight percent of said chemical composition.

9. The chemical composition as recited in Claim 7 further  
2 including a third accelerator wherein said first accelerator is N-  
3 tert-butyl-2-benzoithiazole sulphenamide and said second  
4 accelerator is zinc 2-mercapto benzothiazole and said third  
5 accelerator is tetramethylthiuramic monosulphide.

10. The chemical composition as recited in Claim 8 wherein  
2 said N-tert-butyl-2-benzoithiazole sulphenamide comprises from  
3 about 4% to about 10% by weight of said chemical composition, said  
4 zinc 2-mercapto benzothiazole comprises from about 4% to about 18%  
5 by weight of said chemical composition and said  
6 tetramethylthiuramic monosulphide comprises from about 3% to about  
7 5% by weight of said chemical composition.

11. A process for obtaining curable elastomeric material from  
a sulfur-cured vulcanized elastomeric material, such curable  
elastomeric material being capable of being recompounded and  
recurred into a useful elastomeric product, comprising:

reducing said sulfur-cured vulcanized elastomeric material to  
particle crumbs; and

placing said particle crumbs and a chemical composition into  
a mill, said chemical composition comprising;

sulfur, wherein said sulfur comprises from about 40% to  
about 65% by weight of said chemical composition;

a mixture of accelerators, including a first accelerator  
and a second accelerator, wherein a weight percent ratio of said  
first accelerator to said second accelerator ranges from about 1:1  
to about 5:1; and

an activating agent comprising from about 2% to about 6%  
by weight of said chemical composition;

applying a shearing force to said mixture of said particle  
crumbs and said chemical composition for a period of time equal to  
or less than about 2 minutes and at a temperature ranging from  
about 75°C to about 85°C.

12. The process as recited in Claim 11 wherein a ratio of  
said mixture of particle crumbs to said chemical composition  
comprises about 100 parts of said crumb and between about 1 to 2

4 parts said chemical composition.

13. The process as recited in Claim 11 wherein said mixture  
2 of accelerators includes a third accelerator wherein a weight  
3 percent ratio of said first accelerator to said second accelerator  
4 to said third accelerator ranges from about 3:3:1 to about 4:1:1.

14. The process as recited in Claim 11 wherein said  
2 activating agent includes a zinc salt of a fatty acid, wherein said  
3 zinc salt of a fatty acid comprises from about 3% to about 6% by  
4 weight of said chemical composition.

15. The process as recited in Claim 13 wherein said first  
2 accelerator is N-tert-butyl-2-benzothiazole sulphenamide, said  
3 second accelerator is zinc 2-mercapto benzothiazole and said third  
4 accelerator is tetramethylthiuramic monosulphide.

16. The process as recited in Claim 11 wherein said  
2 activating agent includes a mixture of zinc oxide and stearic acid.

17. The process as recited in Claim 16 wherein said zinc  
2 oxide comprises from about 1% to about 3% by weight of said  
3 chemical composition and said stearic acid comprises from about 1%  
4 to about 3% by weight of said chemical composition.

18. The process as recited in Claim 11 wherein said first  
2 accelerator is N-tert-butyl-2-benzoithiazole sulphenamide and said  
3 second accelerator is selected from the group consisting of zinc 2-  
4 mercapto benzothiazole and tetramethylthiuramic monosulphide and  
5 said mixture comprises from about 34% by weight percent of said  
6 chemical composition.

19. The process as recited in Claim 18 further including a  
2 third accelerator wherein said first accelerator is N-tert-butyl-2-  
3 benzoithiazole sulphenamide and said second accelerator is zinc 2-  
4 mercapto benzothiazole and said third accelerator is  
5 tetramethylthiuramic monosulphide.

20. The process as recited in Claim 19 wherein said N-tert-  
2 butyl-2-benzoithiazole sulphenamide comprises from about 4% to  
3 about 10% by weight of said chemical composition, said zinc 2-  
4 mercapto benzothiazole comprises from about 4% to about 18% by  
5 weight of said chemical composition and said tetramethylthiuramic  
6 monosulphide comprises from about 3% to about 5% by weight of said  
7 chemical composition.